attempt has yet been made to plant or to restore to a natural condition those unsightly tracts which were formerly inclosed, and of which many remain as barren wastes to the present time. The cause of the naturalist is thus imperilled both by the active and by the passive position of the Committee—he is like the pitcher in the Italian proverb, which says that "whether the pitcher hits the stone or the stone hits the pitcher, it is always the worse for the pitcher."

It is now quite unnecessary to make detailed statements of the views of individual naturalists with reference to the present subject. It will be remembered that at a meeting of this Society held last year, Sir Thomas Fowell Buxton brought forward a proposal—and a very excellent one it was—that all landowners round the Forest district should agree to stop generally the destruction of all birds and animals on their estates, so that a great experiment might be carried out for some years, leading to a true "balance of nature" in the whole area comprised between the valleys of the Lea and Roding. At the discussion arising from that suggestion the preservation of the fauna and flora as a whole was advocated, and many naturalists whose opinions will carry great weight expressed their views on the question of forest management. The complete report of this meeting has not yet appeared, but I will refer you to it prospectively, and in an appendix to the part of our *Transactions* now going through the press will appear papers, drawn up at the request of the Council, by Dr. M. C. Cooke, Mr. J. E. Harting, and Prof. Boulger. The evils of deep drainage, from the naturalist's point of view, which form the text of Dr. Cooke's protest, have already been pointed out by many, and I will just call your attention to some remarks on this subject by our eminent honorary member, Mr. A. R. Wallace, in an able article published in the *Fortnightly Review* for November, 1878, wherein he says:—"It must be remembered, too, that a proportion of bog, and swamp, and damp hollows are essential parts of the 'natural aspect' of every great forest tract. It is in and around such places that many trees and shrubs grow most luxuriantly; it is such spots that will be haunted by interesting birds and rare insects; and there alone many of the gems of our native flora may still be found. Every naturalist searches for such spots as his best hunting grounds. Every lover of nature finds them interesting and enjoyable." After enumerating some of the rarer marsh plants of our Forest, Mr. Wallace continues:—"These and many other choice plants would be exterminated if by too severe drainage all such wet places were made dry. The marsh birds and rare insects which haunted them would disappear, and thus a chief source of recreation and enjoyment to that numerous and yearly increasing class who delight in wild flowers, birds, and insects, would be seriously interfered with."

It is somewhat exceptional for a society founded for the study and promotion of natural science to find itself engaged in active polemics, but in taking up the position into which we have been forced, we are simply carrying out that line of action which at our foundation I ventured to lay down as our true function with respect to the Forest. (Inaugural Address, *Transactions*, vol. i. pp. 19, 20.) It is extremely unfortunate that the claims of science should appear to be opposed to the wants of the general public—I say should *appear* to be opposed, because I am convinced that there is no real antagonism. The grievance of naturalists is not only that their claims have been ignored, but the action of the Conservators has hitherto been entirely on the destructive side, and a feeling of alarm has arisen lest the whole of the Forest should piecemeal be desecrated in the name of a fictitious philanthropy. The public wants—as interpreted by the Board of Conservators—are made to take the form of clearing of underwood, drainage, roadmaking, the intersection of the Forest by railways and tramways, and ample public-house accommodation. If these are really the fundamental requirements of holiday-seekers, then there must for ever be a strong antagonism between this class of the public and those whose cause I have taken it upon myself to advocate. At this juncture, however, we may fairly ask whether this kind of artificialised recreation-ground, *à la* Cremorne, is actually demanded by the frequenters of the Forest. I believe myself that it is not. The notion of keeping a holiday in what is only too often a bestial manner is not a fair estimate of the British excursionist. If he gives way to the temptations which have been so lavishly scattered in his path, it is, as Shakespeare puts into the mouth of King John, because "the sight of means to do ill deeds makes ill deeds done." The East Londoner who wishes to spend a day in a "people's park" is provided for elsewhere, but if we consent to the denaturalising of our Forest, the more intelligent class of excursionists—and their name is legion—will be either driven from its precincts or will suffer that degeneration which the line of action at present pursued is exclusively calculated to bring about.

In the course of these remarks I may have somewhat exaggerated the supposed antagonism between the two classes most interested in the conservation of Epping Forest, but I have done so with the object of defining as sharply as possible the position of the hitherto unconsidered naturalist. The conditions requisite for transforming the Forest into a "people's park" are fatal to its preservation as a natural history resort. Any piece of waste land can be made into a park, but a tract of wild forest once destroyed can never be restored. I would once more urge, and most emphatically, that there is not the slightest desire on the part of naturalists to exclude the "toiling million," or to prevent their full enjoyment of the Forest. I wish only to point out that my present contention is that in the long run the wants, both of the naturalist and of the ordinary excursionist, will be found to be absolutely coincident. If the neighbourhood of a railway terminus with its concomitant evils leads to the destruction of the "natural aspect" of any portion of the Forest, that portion is ruined, not only for the naturalist, but likewise for the general public who come to enjoy a day in the country far from "the busy hum of men." By judicious management the requirements of both classes can be met, and it rests entirely with the Conservators to determine whether the attitude of the respective parties is to be pacific or the reverse. It must be remembered that long before the Forest was rescued by the Corporation this district was a favourite resort of multitudes of holiday folk, and, not being interfered with to any considerable extent, was at the same time available to the naturalist. The note of alarm must be sounded, or we may find ourselves worse off than in pre-Conservatorial times. The constitution of the Epping Forest Committee is apparently prejudicial to our interests if we may judge by the standard of past and present actions. Of this Committee the Verderers, who, as representing the Commoners and as residents in the Forest district, are best-qualified to advise with respect to the management of the Forest, form but four of a Committee of sixteen. However enlightened the views of these gentlemen may be—and I only wish I could say that the present Verderers were unanimously of our way of thinking—they are thus liable to be outvoted. Another evil, and a most serious one so far as we are concerned, is that the Committee is practically a secret one—its proceedings are conducted with closed doors, and the people at large, whether naturalists or excursionists, have no means of making their voices heard. Whether this action is just in a case where the funds are derived from a public source it does not enter into my province to consider.

The views which I have now put forward are offered with the best of intentions with respect to the body Conservatorial. We cannot be unmindful of our obligation to the Corporation for having saved the Forest, but we appeal to them to assist in exalting the ideas of those who frequent this place as a holiday resort instead of pandering solely to the more degraded aspect of human nature. A day spent amid the natural beauties of our sylvan glades is the beau ideal of a holiday, intellectually, morally, and physically, to those whose pursuits keep them confined to the town. Let Epping Forest be preserved for the multitudes who have for so long enjoyed it rationally. The "recreation and enjoyment of the public" will thus become possessed of a higher meaning, and the naturalist while carrying on his studies as heretofore will be doubly grateful to those who have secured these time-honoured preserves as a public space free from all fear of inclosure or destruction. The ideas which I have attempted to formulate are I know entertained by large numbers not only of working naturalists, but also by the continually growing class of lovers of the country and of nature in general. It is becoming a matter of almost national importance that the surviving tracts of open country in the neighbourhood of all large towns should be rigidly preserved, and opinions in accordance with this have from time to time been forcibly expressed both with respect to our own Forest and all the common lands in the environs of London.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE

CAMBRIDGE.—The following further appointments to Electoral Boards have been made:—

Professorship of Botany: Sir Jos. Hooker, Dr. F. Darwin,

© 1883 Nature Publishing Group

Dr. M. Foster, Prof. Oliver, Dr. Hort, Dr. Phear (Master of Emmanuel College), Rev. G. F. Browne, and Rev. M. J. Berkeley.

Woodwardian Professorship of Geology: Prof. Prestwich (Oxford), Rev. E. Hill, Mr. W. H. Hudleston, Mr. A. Geikie (Director of Geological Survey), Dr. Phear, Mr. R. D. Roberts, Mr. Ewbank, and Prof. A. Newton.

Professorship of Zoology and Comparative Anatomy: Prof. Flower, Prof. Moseley (Oxford), Dr. M. Foster, Prof. Huxley, Mr. J. W. Clark, Dr. F. Darwin, Prof. Humphry, and Mr. D. McAlister.

The Woodwardian Professor has been authorised to apply a sum equivalent to the late Assistant's stipend in payment of Demonstrators for this and the next term.

The regulations for the degrees of Doctor in Science and Doctor in Letters have been confirmed, with minor modifications.

The additional mathematical examination of candidates for honours in the "Little Go" is to be discontinued; Elementary Logic is to be hereafter allowed as a substitute for Paley's Evidences; Euclid is to be limited to the more useful propositions; algebra is to be increased in quantity; and the examination is to be held three times a year, the additional time being at the beginning of October.

The subject for the next Sedgwick Prize Essay, 1885, is "The Jurassic Rocks of the Neighbourhood of Cambridge."

The last Report of the Mathematical Board recommends that the Moderators and Examiners shall be the adjudicators of the Smith's Prizes, and that the Smith's Prizes be awarded on the results of Part III. of the Mathematical Tripos. This would give more distinction to the examination in the higher subjects. The concurrence of Professors Stokes, Adams, and Cayley in this recommendation is a strong point in its favour.

The report of the Moderators and Examiners in the last Mathematical Tripos, the first under the new system, gives particulars about Part III., to which only the Wranglers are admitted. Of the twenty-nine Wranglers, sixteen presented themselves for Part III., of whom two were not finally classed. In order to give opportunity to a candidate who had confined his reading mainly to one group of the higher subjects to employ his whole time in questions in that group, the examiners in the five bookwork papers gave at least four questions in each group which came into the paper, and fixed five as the limit of questions to be answered. In the fifth paper, subjects for essays were chosen from each group. The majority of candidates attempted too many subjects, and their answers as a rule were poor and meagre. The Examiners are far from satisfied with the average performance of the candidates in Part III., but they expect better results when the new system is better understood, especially the encouragement given to limiting reading in the higher subjects to one or two groups.

FREE admission to the lectures and courses of practical instruction in the Normal School of Science and Royal School of Mines at South Kensington and Jermyn Street will be granted to a limited number of Teachers and Students of Science Classes under the Science and Art Department, who intend to become Science Teachers. The selected candidates will also receive a travelling allowance, and a maintenance allowance of twenty-one shillings per week while required to be present in London. The courses given and the duration of each are as stated below:—Chemistry: Part I., October to February; Parts II. and III., October to June. Physics: Part I., October to February; Parts II. and III., October to June. Biology: October to June. Geology: Part I., February to June; Part II., October to February. Mechanics: Part I., February to June; Parts II. and III., October to June. Metallurgy: October to June. Mining: October to June. Agriculture: October to January. Attendance is required from 9 or 10 a.m. to 4 or 5 p.m. daily, in addition to the time necessary in the evening for writing up notes, &c. Students will be required to attend the Classes for Mathematics, Geometrical Drawing, and Freehand Drawing, so far as may be considered necessary. Candidates for these Studentships must send in their applications before May 31, on Science Form No. 400, copies of which may be obtained on application to the Secretary, Science and Art Department, South Kensington. When the same student is a candidate for more than one course, the order of preference should be given. It should, in all cases, be stated for which course or courses the student is a candidate.

SCIENTIFIC SERIALS

American Journal of Science, February.—Henry Draper, by G. F. B.—Fauna at the base of the Chemung group in New York, by H. S. Williams.—Geological chemistry of Yellowstone National Park.—Geyser waters and deposits, by H. Leffmann.—Rocks of the Park, by W. Beam.—Electromagnetic theory of light; general equations of monochromatic light in media of every degree of transparency, by J. W. Gibbs.—The rainfall in Middletown, Connecticut, from 1859 to 1882, by H. D. A. Ward.—Discoveries in Devonian Crustacea, by J. M. Clarke.—Observations of the transit of Venus, 1882, made at the Lick Observatory, by D. P. Todd.—The antennæ of Melöe, by F. C. Hill.—Hypersthene-Andesite, by W. Cross.—Method for determining the collimation constant of a transit circle, by M. Schæberle.

The American Naturalist, December, 1882, contains:—A pilgrimage to Teotihuacan, by R. E. Hills.—On the grey rabbit (*Lepus sylvaticus*), by Samuel Lockwood.—The Palæozoic allies of Nebalia, by A. S. Packard, jun.—American work on recent mollusca in 1881, by W. H. Dall.—The organic compounds in their relations to life, by L. F. Ward.—The reptiles of the American Eocene, by E. D. Cope.

January, 1883, contains:—The history of anthracite coal in nature and art, by Jas. L. Lippincott.—The development of the male prothallium of the field horse-tail, by D. H. Campbell.—On the geological effects of a varying rotation of the earth, by J. E. Todd.—On the bite of the North American coral snakes (*Elaps*), by F. W. True.—Achenial hairs and fibres of Compositæ, by G. Macloskie.—Instinct and memory exhibited by the flying squirrel in confinement, with a thought on the origin of wings in bats, by F. G. King.—The extinct Rodentia of North America, by E. D. Cope.

February, 1883, contains:—The Kindred of Man, by A. E. Brown.—Indian Stone Graves, by C. Rau.—On organic physics, by C. Morris.—The mining regions of Southern New Mexico, by F. M. Endlich.—The extinct Rodentia of North America, by E. D. Cope.—Spencer and Darwin.—The Beastiarians.

Annalen der Physik und Chemie, No. 2.—The electric conductivity of some cadmium and mercury salts in aqueous solutions by D. Grotrian.—On the change of the double refraction of quartz by electric forces, by W. C. Röntgen.—On the optical behaviour of quartz in the electric field, by A. Kundt.—On the function of magnetisation of steel and nickel, by H. Meyer.—Contributions to the history of recent dynamo-electric machines, with some remarks on determination of the degree of action of electromagnetic motors, by A. von Waltenhofen.—On the viscosity of salt solutions, by S. Wagner.—Researches on the absorption of gases by liquids under high pressures, by S. v. Wroblewski.—Strecker's memoirs on the specific heat of gaseous biatomic compounds of chlorine, bromine, iodine, &c., by L. Boltzmann.—On the luminosity of flames, by W. Siemens.—Distillation in vacuum, by A. Schuller.—Researches on the elasticity of crystals of the regular system, by K. R. Koch.—On absolute measures, by C. Bohn.—Correction of the method adopted by R. Kohlrausch in his researches on contact-electricity, by E. Gerland.—The volume-change of metals in melting, by F. Nies and A. Winkelmann.—Correction, by A. Guebhard.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, February 22.—"Preliminary Note on the Action of Calcium, Barium, and Potassium on Muscle." By T. Lauder Brunton, M.D., F.R.S., and Theodore Cash, M.D.

It has been shown by Ringer that calcium prolongs the contraction of the frog's heart. This prolongation is diminished by the subsequent addition of potash.

It occurred to us that calcium and potassium salts might exercise a similar action on voluntary muscle. On trying it we found this to be the case. Calcium in dilute solution prolongs the duration of the contraction in the gastrocnemius of the frog. Potassium salts subsequently applied shorten the contraction. We have been led to try the effect of barium on muscle by considerations regarding the relations of groups of elements, according to Mendelejeff's classification, to their physiological action. These considerations we purpose to develop in another paper. The effect of barium is very remarkable. It produces a curve

© 1883 Nature Publishing Group